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Brain Mapping of a Wavelet Analyses of Subjects with Obstructive Sleep Apnea

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Obstructive Sleep Apnea Syndrome (OSAS) is a very common sleep disorder with potential severe implications in essential aspects and the patient's health. This study addresses the evaluation of the EEG energy-based brain mapping in before, during and after the OSAS episode using continuous wavelet spectral analyses. The results shows that there is a significant reduction in the energy of δ frequency band but an increase in β band, in overall brain. θ and α have an increased energy in the parietal and occipital cortex, but decreased in the other areas, mainly after the OSAS episode.

An Antibiogram Classification System Based on an Hybrid Hough Transform and Gradient Approach

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The antibiogram performed by the disc diffusion method is a test frequently used in clinical microbiology. In this test, the result is given by the diameter of the inhibition zone formed around the antibiotic disc. In general, this measurement is performed manually. The main objective of this work was to develop an automatic image analysis system to assess the susceptibility of microorganisms to different antibiotics. As a first step, several images of antibiograms were obtained. Subsequently the images were subjected to image processing techniques. After the elimination of noise, the Hough transform was used to detect the antibiotic discs. Next, from the center of each identified disc, the inhibition zone was detected recurring to a gradient method. According to the diameter of the inhibition zone a susceptibility classification was made. The results prove the validity of the developed tool to detect the antibiotics discs and to segment the inhibition zones used in microorganism's susceptibility evaluation.

Hierarchization Process by Possibilistic Fuzzy Clustering of Fuzzy Rules

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This paper presents a possibilistic fuzzy clustering algorithm that is applied to a multidimensional fuzzy set or fuzzy rules. This method can be used to decompose the fuzzy system into an hierarchical structure. The methodology presented leads to a fuzzy partition of the fuzzy rules, one for each cluster, which corresponds to a new set of fuzzy sub-systems. This technique is tested to organize the fuzzy model into a new and more comprehensive structure.

Neural Network Sound Localization for a Manipulator Robotic

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A novel sound source tracking system is proposed in this paper. The system is composed of a robot which has a microphone cross array that can realize sound source localization (SSL) by hearing, and then judge the source with adequate accuracy, thus suitable to be used to decide whether it is our target. The system is computationally efficient and supplies a 3D localization of sound sources by the controller of the manipulator robot. In this paper we use azimuthal and elevation angle, and a set of four microphones topropose a new method for estimating directions of arrival (DOAs) of sound sources, through the inference mechanism of a Neural network (NN), that uses binaural time/intensity cues for determining azimuth/elevation of a sound source as well as the estimation of source distance.